

REMARKS/ARGUMENTS

1. In the above referenced Office Action, the Examiner rejected claims 1, 3-8, 11, and 12 under 35 USC § 102 (b) as being anticipated by Apel (U.S. Patent No. 6,407,647 and claims 2 and 9 under 35 USC § 103 (a) as being unpatentable over Apel (U.S. Patent No. 6,407,647) in view of Morikawa (U.S. Patent No. 6,285,273). These rejections have been traversed and, as such, the applicant respectfully requests reconsideration of the allowability of claims 1 - 15.

2. Claims 1, 3-8, 11, and 12 have been rejected under 35 USC § 102 (b). In particular, the Examiner stated that Apel discloses a dielectric layer between first and second windings 14, 12; the conductive windings having substantially square geometry as seen in figure 1, wherein the ... The applicant respectfully disagrees.

Apel discloses, with reference to Figure 1, a top view of a rectangular spiral broad-side-coupled transmission line element 10. In element 10, an upper transmission line 12 primarily occupies an upper metallization layer. A lower transmission line 14 primarily occupies a lower metallization layer underneath the upper metallization layer. The upper and lower metallization layers are separated by a dielectric layer (not shown in FIG. 1). Each transmission line 12, 14 has an outer terminus 12a, 14a. From the outer terminus 12a, 14a, each transmission line 12, 14 spirals inward to an inner terminus 12b, 14b. (See column 2, lines 42-52.) {emphasis added}

Apel does not teach or suggest using a winding that has a substantially square geometric shape that includes corners of the winding geometrically shaped to reduce impedance of the on-chip inductor at an operating frequency. Apel, however, does teach that the dimensions of element 10 are preferably such that each transmission line 12, 14 has an overall length that is less than or approximately equal to one-eighth of the signal wavelength. (See column 3, lines 48 - 51.)

Contrasting the present invention as claimed in claims 1, 3-8, 11, and 12, the windings are substantially square, not rectangular as taught by Apel. Further, the windings of the presently claimed invention are shaped to include corners that reduce impedance of the on-chip inductor at an operating frequency, where Apel teaches that the length of the winding should be of a particular ratio to the operating frequency (e.g., $1/8$ wavelength).

For the foregoing reasons, the applicant believes that claims 1, 3-8, 11, 12, 14, and 15.

3. Claims 2 and 9 have been rejected under 35 USC § 103 (a). In particular, the Examiner stated that Apel discloses the invention as claimed as cited above except for the interior angle corner of approximately 90° . Morikawa discloses a square spiral conductor in Figure 1, wherein the interior corner angle is approximately 90° . The applicant respectfully disagrees.

In furtherance of the arguments presented above, Morikawa teaches that the striplines 4, 5, 8, and 9 have a

spiral shape or a meander shape (column 6, lines 38 - 41) and is non-specific as to whether the spiral shape is rectangular or square. (See column 3 at lines 40, 46, 56, and 60.)

Morikawa further teaches that, since the balun transformer 1 having the configuration described above has the four striplines 4, 5, 8, and 9 which have a length equal to one fourth the wavelength corresponding to the applied center frequency, the dielectric sheets are not required to have a large area. As a result, the balun transformer 1 is made compact. (See column 4, lines 59 - 64.)


Morikawa does not teach or suggest shaping the windings to reduce impedance of the windings at an operating frequency as is presently claimed.

Thus, combining the reduced form factor transformer of Morikawa with the broadside coupled transmission line element of Apel does not teach or suggest shaping the windings to reduce impedance at an operating frequency as is presently claimed in claims 2 and 9.

For the foregoing reasons, the applicant believes that claims 1 - 15 are in condition for allowance and respectfully request that they be passed to allowance.

The Examiner is invited to contact the undersigned by telephone or facsimile if the Examiner believes that such a communication would advance the prosecution of the present invention.

RESPECTFULLY SUBMITTED,

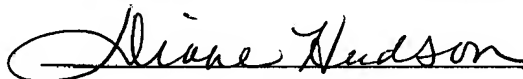
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